AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of claims:

1-16. (canceled)

17. (currently amended) A method for preparing silicic acid polycondensates or silicic acid heteropolycondensates comprising hydrolytically condensing one or more hydrolytically condensable compounds of silicon, said hydrolytically condensable compound optionally comprising one or more elements selected from the group consisting of B, AI, P, Sn, Pb, the transition metals, the lanthanides and the actinides, said condensable compound optionally comprising precondensates of the compound; the reaction optionally comprising one or more of (i) a catalyst, (ii) a solvent, (iii) an ionically polymerizable compound and (iv) a free-radical polymerizable compound; wherein 5 to 100 % mol% based on monomeric compounds of the hydrolytically condensable compounds are silanes of the general formula I:

$$B\{(A)_d\text{-}R'\text{-}U\text{-}R'\text{-}SiX_aR_b\}_c \quad (I)$$

in which:

B is a mono- to tetravalent, straight-chained or branched organic radical with at least one C=C double bond and 4 to 50 carbon atoms;

X is hydrogen, halogen, hydroxy, alkoxy, acyloxy, alkylcarbonyl, alkoxycarbonyl or $NR"_2$;

R is alkyl, alkenyl, aryl, alkylaryl or arylalkyl;

R' is alkylene, alkenylene, arylene, arylenealkylene or alkylenearylene having 2 to 10 carbon atoms, these radicals being able to be interrupted by oxygen and sulphur atoms or by amino groups;

R" is hydrogen, alkyl or aryl;

U is an inorganically modified organic radical comprising a siloxane or carbosiloxane framework having ~~at least~~ two atoms that are silicon or germanium or a carbosilane framework having at least one atom that is silcon or germanium, said framework having 1 to 15 C atoms and up to 5 additional heteroatoms that are O, S or N;

A is C(=O)O, OC(=O)O, C(=O), O, S, C(=O)NR", OC(=O), or NR"C(=O);

a = 1,2 or 3;

b = 0,1 or 2;

a+b = 3;

c = 1,2,3 or 4; and

d = 0 or 1.

18. (currently amended) The method of claim 17, wherein

B is a mono- to tetravalent, straight-chained or branched organic radical with at least one C=C double bond and 4 to 30 carbon atoms;

X is hydrogen, halogen, hydroxy, alkoxy, acyloxy or alkylcarbonyl;

R is alkyl, alkenyl or aryl;

R' is alkylene, alkenylene, arylene, arylenealkylene or alkylenearylene having 2 to 5 carbon atoms, these radicals being able to be interrupted by oxygen and sulphur atoms or by amino groups;

A is C(=O)O, OC(=O)O, C(O), O, OC(=O);

U is an inorganically modified organic radical comprising a siloxane or carbosiloxane framework having ~~at least~~ two atoms that are silicon or germanium or a carbosilane framework having at least one atom that is silcon or germanium, said framework having 1 to 15 C atoms and up to 5 additional heteroatoms that are O or N;

a = 1,2 or 3;

b = 0,1 or 2;

a+b = 3;

c = 1, 2, 3 or 4; and

d = 0 or 1.

19. (currently amended) ~~The method according to claim 17~~ A method for preparing silicic acid polycondensates or silicic acid heteropolycondensates comprising hydrolytically condensing one or more hydrolytically condensable compounds of silicon, said hydrolytically condensable compound optionally comprising one or more elements selected from the group consisting of B, AI, P, Sn, Pb, the transition metals, the lanthanides and the actinides, said condensable compound optionally comprising precondensates of the compound; the reaction optionally comprising one or more of (i) a catalyst, (ii) a solvent, (iii) an ionically polymerizable compound and (iv) a free-radical polymerizable compound; wherein 5 to 100 % mol% based on monomeric compounds of the hydrolytically condensable compounds are silanes of the general formula I:

$$B\{(A)_d\text{-}R'\text{-}U\text{-}R'\text{-}SiX_aR_b\}_c \quad (I)$$

in which:

B is a mono- to tetravalent, straight-chained or branched organic radical with at least one C=C double bond and 4 to 50 carbon atoms;

X is hydrogen, halogen, hydroxy, alkoxy, acyloxy, alkylcarbonyl, alkoxycarbonyl or $NR"_2$;

R is alkyl, alkenyl, aryl, alkylaryl or arylalkyl;

R' is alkylene, alkenylene, arylene, arylenealkylene or alkylenearylene having 2 to 10 carbon atoms, these radicals being able to be interrupted by oxygen and sulphur atoms or by amino groups;

R" is hydrogen, alkyl or aryl;

U is an inorganically modified organic radical comprising a siloxane or carbosiloxane framework having at least two atoms that are silicon or germanium or a carbosilane framework having at least one atom that is silcon or germanium, said framework having 1 to 15 C atoms and up to 5 additional heteroatoms that are O, S or N;

A is C(=O)O, OC(=O)O, C(=O), O, S, C(=O)NR", OC(=O), or NR"C(=O);

a = 1,2 or 3;

b = 0,1 or 2;

a+b = 3;

c = 1,2,3 or 4; and

d = 0 or 1;

wherein an ionically polymerizable compound or a free-radically polymerizable compound is present in the reaction.

20. (currently amended) ~~The method according to claim 18~~ A method for preparing silicic acid polycondensates or silicic acid heteropolycondensates comprising hydrolytically condensing one or

more hydrolytically condensable compounds of silicon, said hydrolytically condensable compound optionally comprising one or more elements selected from the group consisting of B, AI, P, Sn, Pb, the transition metals, the lanthanides and the actinides, said condensable compound optionally comprising precondensates of the compound; the reaction optionally comprising one or more of (i) a catalyst, (ii) a solvent, (iii) an ionically polymerizable compound and (iv) a free-radical polymerizable compound; wherein 5 to 100 % mol% based on monomeric compounds of the hydrolytically condensable compounds are silanes of the general formula I:

$$B\{(A)_d\text{-}R'\text{-}U\text{-}R'\text{-}SiX_aR_b\}_c \quad (I)$$

in which:

B is a mono- to tetravalent, straight-chained or branched organic radical with at least one C=C double bond and 4 to 30 carbon atoms;

X is hydrogen, halogen, hydroxy, alkoxy, acyloxy or alkylcarbonyl;

R is alkyl, alkenyl or aryl;

R' is alkylene, alkenylene, arylene, arylenealkylene or alkylenearylene having 2 to 5 carbon atoms, these radicals being able to be interrupted by oxygen and sulphur atoms or by amino groups;

A is C(=O)O, OC(=O)O, C(O), O, OC(=O);

U is an inorganically modified organic radical comprising a siloxane or carbosiloxane framework having two atoms that are silicon or germanium or a carbosilane framework having at least one atom that is silcon or germanium, said framework having 1 to 15 C atoms and up to 5 additional heteroatoms that are O or N;

a = 1,2 or 3;

b = 0,1 or 2;

a+b = 3;

c = 1, 2, 3 or 4; and

d = 0 or 1;

wherein an ionically polymerizable compound or a free-radically polymerizable compound is present in the reaction.

21. (**previously presented**) The method according to claim 17, wherein the reaction mixture further comprises one or more compounds of the general formula VI, optionally in precondensed form, as an additional hydrolytically condensable compound of silicon:

$$R_e(R^{10}Z')_fSiX_{4-(e+f)} \qquad (VI)$$

in which

X is hydrogen, halogen, hydroxy, alkoxy, acyloxy, alkylcarbonyl, alkoxycarbonyl or NR"2;

R is alkyl, alkenyl, aryl, alkylaryl or arylalkyl;

R" is hydrogen, alkyl or aryl;

R^{10} is alkylene or alkenylene, these radicals being able to be interrupted by oxygen or sulphur atoms or -NH groups;

Z' is halogen or an optionally substituted amino, amide, aldehyde, alkylcarbonyl, carboxy, mercapto, cyano, alkoxy, alkoxycarbonyl, sulfonic acid, phosphoric acid, acryloxy, methacryloxy, epoxy or vinyl group;

e = 0,1,2 or 3; and

f = 0,1,2 or 3, with e + f = 1,2 or 3.

22. (previously presented) The method according to claim 21, in which

X is hydrogen, halogen, hydroxy, alkoxy, acyloxy or alkylcarbonyl; and

R is alkyl, alkenyl or aryl.

23. (previously presented) The method according to claim 18, wherein the reaction mixture further comprises one or more compounds of the general formula VI, optionally in precondensed form, as an additional hydrolytically condensable compound of silicon:

$$R_e(R^{10}Z')_fSiX_{4-(e+f)} \qquad (VI)$$

in which

X is hydrogen, halogen, hydroxy, alkoxy, acyloxy, alkylcarbonyl, alkoxycarbonyl or NR"2;

R is alkyl, alkenyl, aryl, alkylaryl or arylalkyl;

R" is hydrogen, alkyl or aryl;

R^{10} is alkylene or alkenylene, these radicals being able to be interrupted by oxygen or sulphur atoms or -NH groups;

Z' is halogen or an optionally substituted amino, amide, aldehyde, alkylcarbonyl, carboxy, mercapto, cyano, alkoxy, alkoxycarbonyl, sulfonic acid, phosphoric acid, acryloxy, methacryloxy, epoxy or vinyl group;

e = 0,1,2 or 3; and

f = 0,1,2 or 3, with e + f = 1,2 or 3.

24. (previously presented) The method according to claim 23, in which

X is hydrogen, halogen, hydroxy, alkoxy, acyloxy or alkylcarbonyl; and

R is alkyl, alkenyl or aryl.

25-33. (canceled).

34. (previously presented) The method according to claim 17, in which the reaction comprises at least one compound the general

formula VIII, optionally in precondensed form, as an additional hydrolytically condensable compound of silicon:

$$Y_nSiX_mR_{4-(n+m)} \qquad \text{(VIII)}$$

in which

X is hydrogen, halogen, hydroxy, alkoxy, acyloxy, alkylcarbonyl, alkoxycarbonyl or NR"2;

R is alkyl, alkenyl, aryl, alkylaryl or arylalkyl;

R" is hydrogen, alkyl or aryl;

Y is a substituent that comprises a substituted or unsubstituted 1,4,6-trioxaspiro-[4,4]-nonane radical;

n = 1, 2 or 3; and

m = 1, 2 or 3, and $n + m \leq 4$.

35. (previously presented) The method according to claim 34, in which

X = hydrogen, halogen, hydroxy, alkoxy, acyloxy or alkylcarbonyl; and

R = alkyl, alkenyl or aryl.

36. (previously presented) The method according to claim 17, wherein one or more aluminium, titanium or zirconium compounds, soluble in the reaction medium, of the formula:

$$AIR^o \text{ or } MX_yR_z$$

are used, optionally in precondensed form, as an additional hydrolytically condensable compound

in which

M is titanium or zirconium;

the radicals R, R° and X are the same or different;

R° is halogen, hydroxy, alkoxy or acyloxy;

y = 1, 2, 3 or 4;

z = 0, 1, 2 or 3; and

X is hydrogen, halogen, hydroxy, alkoxy, acyloxy, alkylcarbonyl, alkoxycarbonyl or NR"2;

R is alkyl, alkenyl, aryl, alkylaryl or arylalkyl; and

R" is hydrogen, alkyl or aryl.

37. (**previously presented**) The method according to claim 36, in which

X is hydrogen, halogen, hydroxy, alkoxy, acyloxy or alkylcarbonyl; and

R is alkyl, alkenyl or aryl.

38. (**previously presented**) The method according to claim 37, in which y = 2, 3 or 4.

39. (**previously presented**) The method according to claim 36, in which z = 0, 1 or 2.

40. (**previously presented**) The method according to claim 39, in which y = 2, 3 or 4.

41. (**previously presented**) The method according to claim 17, wherein one or more initiators are added to the polycondensate, and the polycondensate is then cured thermally, photochemically, in a covalent-nucleophilic manner or by redox-induction.

42. (**currently amended**) A method for preparing a polymer comprising radical polymerizing one or more compounds that comprise at least one C=C double bond and optionally other radically polymerizable compounds;

the reaction mixture optionally further comprising one or more ionically polymerizable compounds and the process optionally further comprising ionically polymerizing said ionically polymerizable compounds by one or more of heating, irradiating the reaction with electromagnetic radiation, a redox-induction or a covalent-nucleophilic reaction,

the reaction mixture optionally further comprising one or more hydrolytically condensable compounds of silicon and optionally other elements selected from the group consisting of B, Al, Sn, Pb, the transition metals, the lanthanides and the actinides, and/or precondensates derived from said hydrolytically condensable

compounds and the process further optionally comprising hydrolytically condensing said hydrolytically condensable compounds of silicon;

the reaction mixture still further optionally comprising one or more initiators and/or a solvent;

wherein 5 to 100 mol% based on monomeric compounds are selected from condensates of silanes of formula I:

$$B\{(A)_d\text{-}R'\text{-}U\text{-}R'\text{-}SiX_aR_b\}_c \qquad (I)$$

in which:

B is a mono- to tetravalent, straight-chained or branched organic radical with at least one C=C double bond and 4 to 50 carbon atoms;

X is hydrogen, halogen, hydroxy, alkoxy, acyloxy, alkylcarbonyl, alkoxycarbonyl or NR"2;

R is alkyl, alkenyl, aryl, alkylaryl or arylalkyl;

R' is alkylene, alkenylene, arylene, arylenealkylene or alkylenearylene having 2 to 10 carbon atoms, these radicals being able to be interrupted by oxygen and sulphur atoms or by amino groups;

R" is hydrogen, alkyl or aryl;

U is an inorganically modified organic radical comprising a siloxane or carbosiloxane framework having ~~at least~~ two atoms that are silicon or germanium or a carbosilane framework having at least one atom that is silcon or

germanium, said framework having 1 to 15 C atoms and up to 5 additional heteroatoms that are O, S or N;

A is C(=O)O, OC(=O)O, C(=O), O, S, C(=O)NR", OC(=O), or NR"C(=O);

a = 1,2 or 3;

b = 0,1 or 2;

a+b = 3;

c = 1,2,3 or 4; and

d = 0 or 1.

43. (**currently amended**) The method of claim 42, wherein

B is a mono- to tetravalent, straight-chained or branched organic radical with at least one C=C double bond and 4 to 30 carbon atoms;

X is hydrogen, halogen, hydroxy, alkoxy, acyloxy or alkylcarbonyl;

R is alkyl, alkenyl or aryl;

R' is alkylene, alkenylene, arylene, arylenealkylene or alkylenearylene having 2 to 5 carbon atoms, these radicals being able to be interrupted by oxygen and sulphur atoms or by amino groups;

A is C(=O)O, OC(=O)O, C(O), O or OC(=O);

U is an inorganically modified organic radical comprising a

siloxane or carbosiloxane framework having ~~at least~~ two atoms that are silicon or germanium or a carbosilane framework having at least one atom that is silcon or germanium, said framework having 1 to 15 C atoms and up to 5 additional heteroatoms that are O or N;

a = 1,2 or 3;

b = 0,1 or 2;

a+b = 3;

c = 1, 2, 3 or 4; and

d = 0 or 1.

44. (**previously presented**) The method of claim 43, in which one or more silanes of the general formula VIII are used as cationically polymerizable compounds:

$$Y_nSiX_mR_{4-(n+m)} \qquad \text{(VIII)}$$

in which

X is hydrogen, halogen, hydroxy, alkoxy, acyloxy, alkylcarbonyl, alkoxycarbonyl or NR"2;

R is alkyl, alkenyl, aryl, alkylaryl or arylalkyl;

R" is hydrogen, alkyl or aryl;

Y is a substituent that comprises a substituted or unsubstituted 1,4,6-trioxaspiro-[4,4]-nonane radical;

n = 1, 2 or 3; and

m = 1, 2 or 3, and n + m is less than or equal to 4.

45. (**canceled**).

46. (**previously presented**) The method according to claim 42, wherein the reaction mixture comprises at least one hydrolytically condensable compound of silicon and optionally other elements from the group consisting of B, Al, Sn, Pb, the transition metals, the lanthanides and the actinides, and/or precondensates derived from said hydrolytically condensable compound, and the process further comprises a step of hydrolytically condensing said at least one hydrolytically condensable compound.

47. (**previously presented**) The method according to claim 43, wherein the reaction mixture comprises at least one hydrolytically condensable compound of silicon and optionally other elements from the group consisting of B, Al, Sn, Pb, the transition metals, the lanthanides and the actinides, and/or precondensates derived from said hydrolytically condensable compound, and the process further comprises a step of hydrolytically condensing said at least one hydrolytically condensable compound.

48. (**previously presented**) according to claim 44, wherein the reaction mixture comprises at least one hydrolytically condensable compound of silicon and optionally other elements from the group

consisting of B, Al, Sn, Pb, the transition metals, the lanthanides and the actinides, and/or precondensates derived from said hydrolytically condensable compound, and the process further comprises a step of hydrolytically condensing said at least one hydrolytically condensible compound.

49. (**previously presented**) The method according to claim 42, in which the reaction mixture comprises one or more compounds of the general formula VI, optionally in precondensed form, as at least one hydrolytically condensable compound of silicon:

$$R_e(R^{10}Z')_fSiX_{4-(e+f)} \qquad (VI)$$

in which

X is hydrogen, halogen, hydroxy, alkoxy, acyloxy, alkylcarbonyl, alkoxycarbonyl or NR''_2;

R is alkyl, alkenyl, aryl, alkylaryl or arylalkyl;

R" is hydrogen, alkyl or aryl;

R^{10} is alkylene or alkenylene, these radicals being able to be interrupted by oxygen or sulphur atoms or -NH groups;

Z' is halogen or an optionally substituted amino, amide, aldehyde, alkylcarbonyl, carboxy, mercapto, cyano, alkoxy, alkoxycarbonyl, sulfonic acid, phosphoric acid, acryloxy, methacryloxy, epoxy or vinyl group;

e = 0,1,2 or 3; and

f = 0,1,2 or 3, with e + f = 1,2 or 3.

50. (**previously presented**) The process according to claim 17, wherein the reaction mixture further comprises one or more compounds of the general formula IX, optionally in precondensed form, as at least one condensable compound of silicon:

$$G\{A-(Z)_d-R^{20}(R^{21})-R'-SiX_aR_b\}_c \qquad (IX)$$

in which:

X is hydrogen, halogen, hydroxy, alkoxy, acyloxy, alkylcarbonyl, alkoxycarbonyl or NR''_2;

R is alkyl, alkenyl, aryl, alkylaryl or arylalkyl;

R" is hydrogen, alkyl or aryl; and

G is a straight-chained or branched organic radical with at least one C=C double bond and 4 to 50 carbon atoms;

d = 1;

A is O, S or NH;

Z is C=O;

R^{20} is alkylene, arylene or alkylenearylene comprising 1 to 10 carbon atoms, and optionally interrupted by one or more atom of oxygen or sulfur or by one or more amino group;

R^{21} is COOH;

or

G is a straight-chained or branched organic radical with at least one C=C double bond and 4 to 50 carbon atoms;

d = 1

A is O, S, or NH;

Z is C=O;

R^{20} is alkylene, arylene or alkylenearylene comprising 1 to 10 carbon atoms, and optionally interrupted by one or more atom of oxygen or sulfur or by one or more amino groups;

R^{21} is H;

or

G is a straight-chained or branched organic radical with at least one C=C double bond and 4 to 50 carbon atoms;

d = 0

A is O, S, NH or COO;

R^{20} is alkylene, arylene or alkylenearylene comprising 1 to 10 carbon atoms, and optionally interrupted by one or more atom of oxygen or sulfur or by one or more amino group;

R^{21} is OH;

or

G is a straight-chained or branched organic radical with at least one C=C double bond and 4 to 50 carbon atoms;

d = 1;

A is S;

Z is C=O;

R^{20} is N;

R^{21} is H;

or

G is a straight-chained or branched organic radical with at least one C=C double bond and 4 to 50 carbon atoms;

d = 1;

A is O, S, NH or COO;

Z is CHR, with R being H, alkyl, or alkylaryl;

R^{20} is alkylene, arylene or alkylenearylene comprising 1 to 10 carbon atoms, and optionally interrupted by one or more atom of oxygen or sulfur or by one or more amino group;

R^{21} is OH;

and

a = 1, 2 or 3;

b = 0, 1 or 2;

a+b = 3;

c = 1, 2, 3 or 4.

51. (previously presented) The method of claim 50, in which

X = hydrogen, halogen, hydroxy, alkoxy, acyloxy or alkylcarbonyl; and

R = alkyl, alkenyl or aryl.

52. (**previously presented**) A polymer made by the process of claim 17.

53. (**previously presented**) A dental filling material, dental cement, dental crown, dental bridge, dental facing material, dental lacquer, dental sealer, dental adhesion promoter, dental primer or dental bonder comprising a polymer made by the process of any one of claims 21-24.